Name:

Date:

**Linear Functions:** y = mx + b

Circle the rate of change/slope. Underline the y-intercept/initial value

In this function, do you add or multiply?

In this function, do you add the *same amount* or a *different amount* each time?

To make a line, you need a and

***Slope***

What is a slope?

Find the slope between the following points:

* (2, -7) and (5, 2)  
    
    
  + From one point to the next, you go
* (4, 3) and (8, -5)  
    
    
    
  + From one point to the next, you go
* (0, 7) and (6, 12)  
    
    
    
  + From one point to the next, you go

***y-intercept***

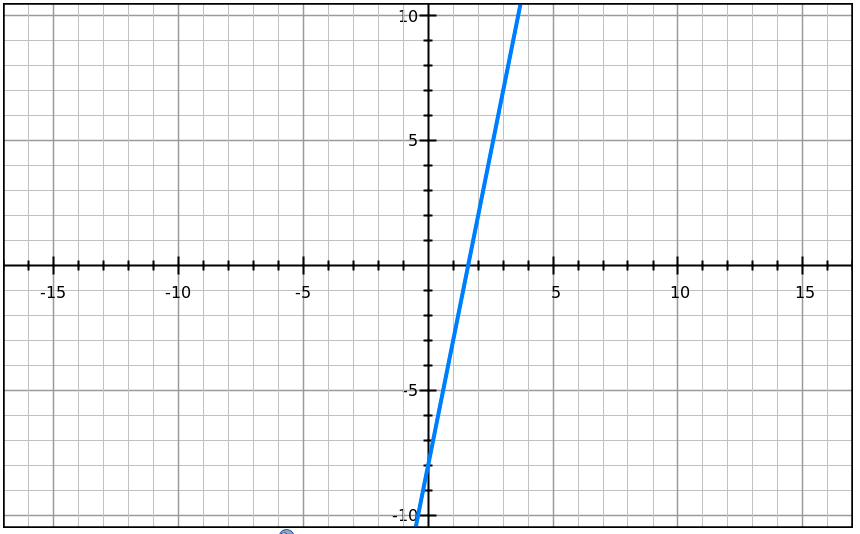
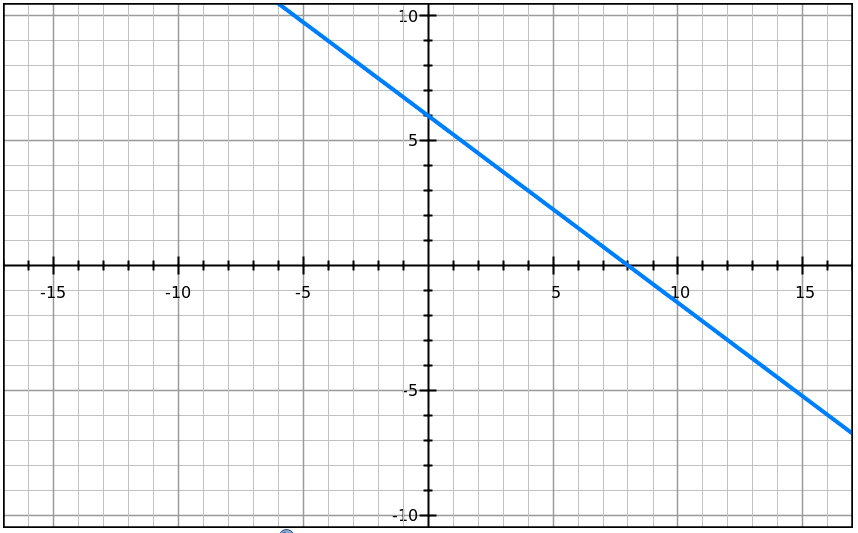
If you have one point and a slope, you can find the y-intercept by

* Find the y-intercept of a line with a slope of 3 and a point at (6, 10).
* Find the y-intercept of a line with a slope of ¾ and a point at (12, 2).
* Find the y-intercept of a line with a slope of -⅝ and a point at (8, 10).

***The Equation of the Line:***

Put together the two steps you just did.

1. Find the slope by using
2. Find the y-intercept by
3. Write the equation of your line

* Find the equation of the line that passes through the points (2, 15) and (8, 5).
* Find the equation of the line that passes through the points (3, 8) and (-2, -10)
* Find the equation of the following line:  
  
* Find the equation of the following line:  
  

**Parallel and Perpendicular Lines**

Do parallel lines have the same slope or different slopes?

Do parallel lines have the same y-intercepts or different y-intercepts?

Perpendicular lines have **opposite reciprocal** slopes.

Examples of opposites are: 2 & -2

4 & -4

Examples of reciprocals are: 2 & ½

4 & ¼

Examples of **opposite reciprocals** are: 2 & -½

4 & -¼

Write the **opposite reciprocal** of 5

* Find the **slope** of the line that is parallel to y = ⅙x – 2.
* Find the **slope** of the line that is parallel to y = -4x + 3.
* Find the **slope** of the line that is perpendicular to y = -5x + 10.
* Find the **slope** of the line that is perpendicular to y = ⅗x – 9.

Find the **equation** of the line that contains the points (3, 8) and (-2, -2).

Now find the equation of the line that is **parallel** to that line and contains the point (7, 8).

Now find the equation of the line that is **perpendicular** to that line and contains the point (12, 4).



